

LSI Docket No. 03-0827

Remarks/Arguments

In the Office Action mailed on 2 November 2005, the Examiner objected to the drawings, objected to the Specification, and objected to claims 10 and 18-20. The Examiner also rejected claims 1, 2, 6, 7, and 11-17 (and apparently claims 8 and 18 though not so listed) as anticipated by Fujimoto (United States Patent Number 6,477,619), rejected claims 3-5, 10, and 20 as unpatentable over Fujimoto in view of Applicants' admitted prior art ("AAPA"), and rejected claims 9 and 19 as unpatentable over Fujimoto in view of Reuter (United States Patent Application Publication Number 2002/0019922).

Applicants have amended various claims in response to the Examiner's objections and rejections and for editorial clarity to better protect the invention. Applicants have canceled claims 8, 9, 13-15, 18, and 19 in hopes of advancing prosecution of this application and respectfully request reconsideration and withdrawal of all outstanding objections and rejections.

Drawing Objection

The Examiner objected to the drawings as failing to show every element claimed. In particular, the Examiner noted that the "I/O module" of claims 4 and 5 was not shown in the claims. Though Applicants respectfully disagree with the Examiner's position that every element must be shown, use of the term "I/O module" was an oversight on the part of the undersigned. Claims 4 and 5 were intended to refer to the additional circuits as a "plug-in card" or "PIC" to be consistent with the terminology used throughout the specification. Claims 4 and 5 have been amended (along with numerous other claims) to recite the use of a "plug-in card" or "PIC" in reference to the optional additional circuits added to the first storage controller to provide N-way connectivity.

In view of the amendments to claims 4 and 5 (and numerous other claims), Applicants respectfully request reconsideration and withdrawal of the objection to the drawings.

Specification Objection

LSI Docket No. 03-0827

The Examiner objected to the Specification due to the typographic error on page 12 where a host interface 204-2 is mistakenly referred to as "20402". Applicants thank the Examiner for his careful reading and have amended the specification accordingly without adding new matter. In view of the amendment to the Specification, Applicants respectfully request reconsideration and withdrawal of the objection thereto.

Claim Objection

The Examiner objected to claims 10 and 18-20 due to certain informalities. Claims 18 and 19 have been canceled. Claims 10 and 20 have been amended in accordance with the Examiner's helpful suggestion. In view of the amendment to claims 10 and 20 and the cancellation of claims 18 and 19, Applicants respectfully request reconsideration and withdrawal of the objection to claims 10 and 18-20.

§102 and 103 Rejections

The Examiner rejected claims 1, 2, 6, 7, and 11-17 under §102 as anticipated by Fujimoto. Though not listed as such by the Examiner, claims 8 and 18 were also rejected as anticipated by Fujimoto. All other claims (3-5, 9, 10, 19, and 20) were rejected under §103 as unpatentable over Fujimoto either in view of AAPA or in view of Reuter. In particular, all independent claims 1, 6, 11, and 16 were rejected under §102 as anticipated by Fujimoto.

All independent claims 1, 6, 11, and 16 have been amended to recite structure or methods relating to the optional "plug-in card" (or "PIC") architecture referenced throughout the Specification as a key enhancement over AAPA. The PIC structure and related methods provide for dramatically enhanced flexibility in scaling of a storage controller from a standalone storage element to a network or cluster of storage elements where all storage controllers include N-way connectivity. The plug-in architecture of the independent claims (as amended) is clearly distinguished from the teachings of Fujimoto. Further, such a PIC structure and associated methods are not reasonably suggested by the prior art of record (considered individually or in any combination). The benefits of such a PIC structure and associated methods are clearly discussed in the subject application.

LSI Docket No. 03-0827

Lower cost and complexity to scale up from a low cost standalone storage element to a network or cluster of storage elements all N-way interconnected using PICs (plug-in cards) in each storage controller

By contrast, Fujimoto shows nothing more than the admitted prior art (AAPA) in that all storage controllers of Fujimoto include all features for redundant connectivity among the controllers. The full cost and complexity of design that permits redundant connectivity is present in a controller of Fujimoto even if a single controller would be used in a standalone mode. Thus, Fujimoto does not provide the flexible scalability of the claimed invention where an optional PIC provides the added N-way connectivity for a storage controller otherwise adapted for standalone operation.

Still further, even if Fujimoto showed such a flexible scalable feature which it does not, Fujimoto does not show N-way connectivity as recited in the claims. Fujimoto does not show a first storage controller accessing storage devices (e.g., disk drives) of a second storage element nor does he show a second storage controller accessing storage devices of the first storage element. Rather, the only connectivity discussed by Fujimoto is one storage controller having access to cache memory "CM" or shared memory "SM" of another storage element. There is no discussion in Fujimoto of complete N-way connectivity as discussed in the subject application and as recited in the claims.

For at least the reasons above, independent claims 1, 6, 11, and 16 as amended are maintained to be distinguished over all prior art of record (considered individually or in any combination). Remaining dependent claims 2-5, 7, 10, 12, 17, and 20 are also maintained to be allowable for at least the same reasons and as dependent from allowable base claims. Applicants respectfully request reconsideration and withdrawal of the §102 and §103 rejections of all remaining claims.

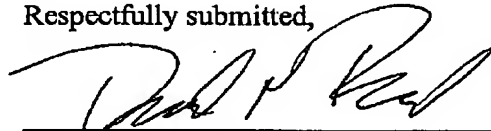
LSI Docket No. 03-0827

Conclusion

Applicants have amended the specification and claims 10 and 20 in response to the Examiner's objections thereto. Applicant has amended claims 4 and 5 in response to the Examiner's objection to the drawings. Independent claims 1, 6, 11, and 16 have been amended to distinguish over Fujimoto. Various claims dependent therefrom have been amended for editorial clarity to better protect the invention. Claims 8, 9, 13-15, 18, and 19 have been canceled to advance prosecution of this application. Applicants have thoroughly discussed the Examiner's rejections of all claims and have requested reconsideration and withdrawal of same.

No additional fees are believed due. Should any issues remain, the Examiner is encouraged to telephone the undersigned attorney.

Respectfully submitted,



Daniel N. Fishman #35,512
Duft Bornsen & Fishman, LLP
1526 Spruce Street, Suite 302
Boulder, CO 80302
(303) 786-7687
(303) 786-7691 (fax)